

REMARKS

Claims 33 and 39 – 41 remain in this application for consideration. Newly submitted claims 39 – 41 correspond generally to the subject matter of canceled claim 29 although the scope of the claims is somewhat different because the wording has been modified from original independent claim 28.

Claims 28 and 29 as originally submitted were rejected by the Examiner as being anticipated by or obvious in view of the Sheinman reference. Newly submitted claim 39 calls for a plurality of radially extending *curved* blades formed in the tray deck and presenting *narrowing* vapor flow channels through the tray. The other elements of the claim generally correspond to the elements of original claim 28, namely, at least one can, at least one downcomer, and a plurality of deflector blades positioned within the can.

The Examiner's rejection of original claim 29 stated that the subject matter of the claim would be obvious in view of Sheinman since "simple changes in shape and/or size has long been established as an obvious means of carrying the invention of another forward." The authority cited by the Examiner is not applicable to the present application since in each of the cited cases there was nothing more than a change of shape or dimension with no indication of this change resulting in any effect which was not contemplated by the original invention. In each of the cited cases, there was also nothing to support a conclusion that the change of shape or dimension represented any departure from the prior art. That is not the situation with regard to the presently claimed invention. First of all, the present applicants have specified not only that the radially extending blades be curved, but that the blades present narrowing vapor flow channels through the tray. The Sheinman reference, which is the sole grounds for rejection of the original corresponding claim (29), teaches not only that the vanes in the bottom of the tray be straight, it

contemplates a vapor channel of either constant or widening dimensions. This is directly contrary to the invention claimed in claim 39 of the present application which specifies that the blades present narrowing vapor flow channels. Thus, not only have the present applicants changed the structure from what is taught by Shienman but they have proceeded directly contrary to the teachings of Sheinman. The Buckman reference, while not applied to original claim 29, is further evidence that curved blades forming narrowing vapor flow channels are contrary to the prior art teachings since Buckman discloses only planar vanes.

The reason why only straight vanes or blades have heretofore been employed in cyclonic contacting devices is, as explained in the Sheinman specification, because the primary purpose of the blades was to "disburse the liquid, throwing it against the inner surface of the shell 4 and providing swirling movement." It was heretofore believed that the straight blades or vanes were the optimum shape for achieving the stated purpose. The present applicants discovered, however, that by utilizing curved blades which present narrowing vapor flow channels, such construction (1) provides additional turbulence to the vapor passing through the blades (2) increases the velocity of the vapor as a result of the narrowing flow channels (3) provides for better distribution of vapor (4) reduces the pressure drop across the tray and (5) reduces liquid weeping through the blades. The fact that neither of the applied prior art references even contemplates the claimed invention is evidence of non-obviousness. The fact that the cited reference Sheinman, teaches directly contrary to the claimed invention is overwhelming evidence of non-obviousness.

Claims 40 and 41 set forth additional refinements in the basic invention called for by claim 39. The utilization of stacked plates with blades superimposed and in contact with the blades of an adjacent plate is, in and of itself, a patentable improvement in the invention

specified by claim 39. The subject matter of claims 40 and 41 is nowhere taught or suggested by either Sheinman or Buckman and accordingly, these claims are clearly allowable.

Claim 33 has been amended to present in method terms the inventive method which is performed utilizing the structure of new claim 39. Specifically, claim 33 recites in the preamble the limitation of providing a plurality of radially extending curved blades which present narrowing vapor channels through the tray and recites the method step of passing the vapor stream upwardly through the narrowing flow channels followed by increasing the velocity of the vapor stream as it passes through these channels and inducing a swirling movement in the vapor. These method steps are nowhere suggested or taught by the Sheinman and Buckman references taken individually or in combination. For the reasons discussed above with regard to apparatus claim 39, claim 33 is also allowable.

Every effort has been made to restrict the subject matter of the remaining claims to an invention which is clearly patentable over the prior art of record. Applicant does intend to file a divisional application with regard to the subject matter of some of the withdrawn claims.

A Notice of Allowance is solicited.

Acknowledgement of receipt is respectfully requested.

Respectfully submitted,

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